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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,589	09/29/2003	Robert James Byram	DP-309304	2404
22851	7590	12/14/2005	EXAMINER	
DELPHI TECHNOLOGIES, INC.			WHITTINGTON, KENNETH	
M/C 480-410-202			ART UNIT	
PO BOX 5052			PAPER NUMBER	
TROY, MI 48007			2862	

DATE MAILED: 12/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/673,589	Applicant(s) BYRAM, ROBERT JAMES	
	Examiner Kenneth J. Whittington	Art Unit 2862	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2005 and 26 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 5-7 and 9-27 is/are pending in the application.
- 4a) Of the above claim(s) 16-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 5-7 and 9-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


Bot Ledyne
Primary Examiner

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The Responses filed July 15, 2005 and August 26, 2005 have been entered and considered. The Declaration under 37 CFR 1.131 filed therewith has been review and is found persuasive. Accordingly, the Mattson et al. reference (US2004/0257067) has
6 been removed as a reference. In view of the numerous amendments to the claims, the outstanding art rejections are withdrawn in favor the rejections noted below.

Election/Restrictions

Restriction to one of the following inventions was required
12 under 35 U.S.C. 121:

- I. Claims 1-15, drawn to a rotary position sensor wherein the magnetic sensor is oriented between a pair of magnetic poles, classified in class 324, subclass 207.25.
- II. Claims 16-27, drawn to a rotary position sensor
18 wherein the magnetic sensor is oriented between a pair of pole pieces, classified in class 324, subclass 207.2.

The restriction was confirmed in the noted responses with the request that claims 14 and 15 be included in Group II. However, because of the outstanding rejection under 25 USC 112

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for both claims, it remains unclear the scope of the claims and whether they read on Group I or Group II. Furthermore, because they depend directly from claim 1, they, as best understood, would necessarily read on claim 1 and will accordingly be examined as such in Group I and will not be withdrawn at this time. If Applicant wishes to cancel the claims, Applicant may do so via an amendment.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

12 The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 14 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 14 recites a limitation that is impossible and therefor indefinite in some circumstances. For example, this claim recites that the axis of rotation is located between the magnetic assembly and the magnetosensitive device along a centerline (which extends through the axis of rotation). However, if the magnetosensitive device is offset from the axis of rotation during a rotation, then at some point in the

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rotation, the magnetosensitive device will be offset from the centerline and the axis of rotation will not be between the magnetic assembly and the magnetosensitive device along the centerline. This is shown in FIG. 7 of the application.

Although the centerline I is not shown in FIG. 7, it would
6 extend at a 45 degree angle from the upper left to the bottom right of the figure (using FIG. 1 as a reference to where centerline I is located).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not
12 included in this action can be found in a prior Office action.

Claims 1, 5, 6, 7, 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamaoka et al. (US 6,498,479), hereinafter Hamaoka I, in view of Hamaoka et al. (US 6,356,073), hereinafter Hamaoka II.

Regarding claim 1, Hamaoka I teaches a rotary position
18 sensor having an axis of rotation (See Hamaoka I FIGS. 3A and 3B), comprising:

a magnetic assembly having first and second poles with an air gap therebetween, the air gap having a non-uniform field symmetric with respect to an imaginary line between the poles and the field is symmetric with respect to a line passing

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through the axis of rotation and perpendicular to the imaginary line (See FIGS. 3A or 3B, items 25);

a magneto-resistive sensor located within the air gap having a reference point within the air gap and a reference direction, (See FIGS. 3A and 3B, items 30, and col. 5, lines 44-
6 51);

wherein the axis of rotation is midway between the magnets and is a first distance from the reference point of the magnetic sensor (See FIGS. 3A and 3B);

wherein the air gap is a second distance (See FIG. 9), and
wherein the rotary position does not have flux shapers
12 between the first and second poles (See FIGS. 3A and 3B and col. 2, line 53 to col. 3, line 8, note the only pole piece in the apparatus is ring 24, the center mounting section 29 being a molded resin, therefor there are no flux shapers between the magnets).

However, Hamaoka I does not explicitly show the reference
18 direction as claimed. Hamaoka II teaches mounting the sensor such that its reference direction is perpendicular to an imaginary plane passing through the reference point and the axis of rotation (See Hamaoka II FIGS. 9 and 10). It would have been obvious at the time of invention to modify the apparatus of Hamaoka I wherein the sensors are parallel to the imaginary line
24 such that the sensors are perpendicular to the imaginary line as

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taught by Hamaoka II. One having ordinary skill in the art would have been motivated to do so because, as noted in Hamaoka II, the two orientations are merely alternative orientations of offsetting Hall sensors for measuring the magnetic field in a rotary position sensor (See Hamaoka II FIGS. 8 and 9 and col. 5, 6 lines 16-33, note that each Hall IC 31 provides a voltage, the pair dual voltages are compared for abnormalities) and therefore either orientation could be used depending on the apparatus design. Furthermore, one having ordinary skill in the art would know that simply rotating a Hall sensor 90 degrees provides equal performance of the Hall sensor and such rotation only 12 changes the phase of the measurement (See Pointer, US 6,771,065).

Regarding claim 5, Hamaoka I teaches the magnetic assembly being either a magnet arc or a ring magnet (See FIGS. 3A and 3B, items 25).

Regarding claim 6, Hamaoka I teaches the magnetic assembly 18 further comprising a flux carrying ring affixed to the magnets (See FIGS. 3A and 3B, item 24 and col. 2, line 53 to col. 3, line 7).

Regarding claims 9-10, it is noted that where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having 24 the claimed relative dimensions would not perform differently

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than the prior art device, the claimed device was not patentably distinct from the prior art device. See *In Gardner v. TEC Systems, Inc.*, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 225 USPQ 232 (1984). Since the noted combination teaches all the features of the claimed invention and would not perform

6 differently, the claimed dimensions are not patentably distinct from the noted combination and therefore one having ordinary skill in the art would have been motivated to make the recited dimensions in order to make the apparatus a certain size.

Regarding claims 11-13, Hamaoka II teaches the first selected distance being about 15-25% of the second selected
12 distance (See FIGS. 3A and 3B), reading on the claims.

Nonetheless, it is noted that where the general features of the claims are taught in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. See *In re Aller*, 105 USPQ 233, 235 (CCPA 1955). Since the noted combination teaches all the features and
18 appears to overlap the noted percentages of the claimed invention and would not perform differently, the claimed dimensions are not patentably distinct from the noted combination and therefor one having ordinary skill in the art would have been motivated to make the recited dimensions in order to make the apparatus a certain size.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hamaoka I in view of Hamaoka II as applied to claim 1 above, and further in view of Schroeder et al. (US 6,489,761), hereinafter Schroeder. The noted combination teaches all the features except the material for the magnet.

6 Schroeder teach using a samarium cobalt magnet for a rotary position sensor having opposing magnets with a sensor therebetween (See Schroeder col. 7, lines 13-25). On having ordinary skill in the art would have been motivated to use such magnets because samarium cobalt magnets are well known and commonly used magnets in the art for magnetic position sensors.

12

Response to Arguments

Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new grounds of rejection.

18

Conclusion

Applicant's amendment of claim 1 introducing new features to the claims necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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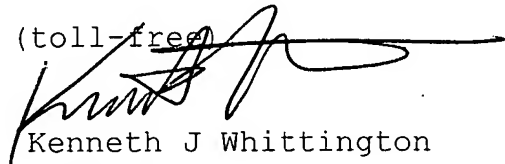
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened
6 statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth J. Whittington whose telephone number is (571) 272-2264. The examiner can normally be reached on Monday-Friday, 7:30am-4:00pm.

If attempts to reach the examiner by telephone are
18 unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through
6 Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)



Kenneth J Whittington
Examiner
Art Unit 2862

kjw